

IN THE CLAIMS:

1. (Currently Amended) Laying apparatus for cables, lines, or conductors, the laying apparatus having a hydraulic circuit comprising:

a pre-loading pump for preventing cavitation and sudden variations in pressure inside said hydraulic circuit,

a variable delivery feed pump for pumping oil through the hydraulic circuit,

a motor, hydraulically connected to said feed pump, and able to drive laying means for laying said cables, lines, or conductors,

detection means for measuring the pressure of the oil inside said hydraulic circuit and comparing the measured pressure with a pre-determined pressure value,

at least one command member of said feed pump which controls delivery of said feed pump, and

valve means for intercepting oil from a pilot pipe functionally connected to said pre-loading pump and said at least one command member of said feed pump, said valve means being connected to said detection means[[,]] and able to modify operation of said hydraulic circuit by acting on said at least one command member of said feed pump which controls delivery of the feed pump to reduce the hydraulic delivery of said feed pump in the event that the pressure measured exceeds said pre-determined pressure value.

2. (Withdrawn) Apparatus as in claim 1, wherein said detection means and said valve means are of the electronic type and comprise respectively a sensor associated with said hydraulic circuit and connected to electronic processing means and an electro-valve governed by said electronic processing means and able to be selectively driven to act on the at least one command member of said feed pump to reduce the hydraulic delivery thereof.

3. (Withdrawn) Apparatus as in claim 2, wherein:

said sensor is able to detect an electric signal that is correlated to the pressure of the oil in the hydraulic circuit, and

said electronic processing means compare a value of said electric signal with a pre-determined value to determine whether the pressure threshold has been exceeded or not.

4. (Previously Presented) Apparatus as in claim 1, wherein:
said detection means and said valve means are of the hydraulic type, and
said valve means comprises a valve able to be selectively activated to act on the at least one command member of said feed pump to vary the hydraulic delivery of said feed pump.

5. (Currently amended) Apparatus as in claim 1, ~~further comprising a~~ wherein said pre-loading pump is the sole source of pressurized oil into ~~for preventing cavitation and sudden variations in pressure inside~~ said hydraulic circuit, the pre-loading pump in fluid communication with the hydraulic circuit through a pipe.

6. (Previously Presented) Apparatus as in claim 1, wherein said feed pump is of the reversible type and is connected to said motor by two symmetrical pipes, so that each of said two pipes is functionable either as a delivery pipe or return pipe.

7. (Withdrawn) Apparatus as in claim 2, wherein said command member is mechanically connected to a hydraulic actuator kept in an intermediate position of balance by counteracting elastic means for balancing said actuator arranged inside respective containing chambers.

8. (Withdrawn) Apparatus as in claim 7, wherein:
at least one of said containing chambers is connected to said valve means, and

the activation of said valve means determines the axial displacement of said hydraulic actuator for inverting the direction of pumping or reducing the hydraulic delivery of the feed pump.

9. (Withdrawn) Apparatus as in claim 8, further comprising:
a distributor valve connected to said containing chambers that axially displaces the hydraulic actuator in accordance with a manual command, wherein
said valve means predominates over said distributor valve in affecting the displacement of the actuator.

10. (Previously Presented) Apparatus as in claim 6, further comprising two limit valves, symmetrically located parallel to said symmetrical pipes, that recirculate the oil pumped by the feed pump when said motor is subjected to excessive forces.

11. (Currently Amended) Laying method for cables, lines, or conductors, in an apparatus comprising a hydraulic circuit provided with a pre-loading pump for preventing cavitation and sudden variations in pressure inside said hydraulic circuit, activating means for intercepting oil from a pilot pipe functionally connected to said pre-loading pump and at least one command member of said feed pump, a variable delivery feed pump and a motor connected to said feed pump to drive laying means for said cables, lines, or conductors, the method comprising:

detecting with detection means the pressure of oil in said hydraulic circuit,
comparing with comparison means said detected pressure with a pre-determined threshold value, and

said activating valve means ~~to modify~~ modifying operation of said hydraulic circuit by acting on said at least one command member of said feed pump to control hydraulic delivery of the feed pump to reduce the hydraulic delivery of the oil by the feed pump to the motor in the event the pressure detected exceeds the pre-determined threshold value.

12. (Previously Presented) Laying machine for cables, lines, or conductors, the laying machine comprising:

laying means, for simultaneously laying a plurality of cables, lines, or conductors, comprising a plurality of laying apparatuses as in claim 1, correlated in number to that of said plurality of cables, lines, or conductors simultaneously laid, to be able to regulate, in an independent manner, each respective threshold of intervention for reducing the hydraulic delivery of the feed pump of each of the respective laying apparatuses in the event that the respective pressure measured exceeds said respective pre-determined pressure value.

13. (Currently Amended) Apparatus as in claim 4, further comprising an actuator, wherein said at least one command ~~members are~~ member is mechanically connected to an said actuator kept in an intermediate position of balance by counteracting elastic means for balancing said actuator arranged inside respective containing chambers.

14. (Currently Amended) Apparatus as in claim 13, wherein:
said actuator comprises a hydraulic actuator,
at least one of said containing chambers is connected to said valve means, and
the activation of said valve means determines the axial displacement of said hydraulic actuator for inverting the direction of pumping or reducing the hydraulic delivery of the feed pump.

15. (Currently Amended) Laying apparatus for cables, lines, or conductors, the
laying apparatus having a hydraulic circuit comprising:
a variable delivery feed pump for pumping oil through the hydraulic circuit,
a motor, hydraulically connected to said feed pump, and able to drive laying means for
laying said cables, lines, or conductors,

detection means for measuring the pressure of the oil inside said hydraulic circuit and comparing the measured pressure with a pre-determined pressure value,

at least one command member of said feed pump which controls delivery of said feed pump, and

valve means, connected to said detection means, and able to modify operation of said hydraulic circuit by acting on said at least one command member of said feed pump which controls delivery of the feed pump to reduce the hydraulic delivery of said feed pump in the event that the pressure measured exceeds said pre-determined pressure value;

wherein said detection means and said valve means are of the hydraulic type, and said valve means comprises a valve able to be selectively activated to act on the at least one command member of said feed pump to vary the hydraulic delivery of said feed pump; and

wherein said actuator comprises an hydraulic actuator,
at least one of said containing chambers is connected to said valve means, and
the activation of said valve means determines the axial displacement of said hydraulic actuator for inverting the direction of pumping or reducing the hydraulic delivery of the feed pump; and

further comprising:

an actuator, wherein said at least one command member is mechanically connected to said actuator kept in an intermediate position of balance by counteracting elastic means for balancing said actuator arranged inside respective containing chambers; and

Apparatus as in claim 14, further comprising:

a distributor valve connected to said containing chambers that axially displaces the actuator in accordance with a manual command, wherein

said valve means predominates over said distributor valve in affecting the displacement of the actuator.

16. (Withdrawn) Laying machine for cables, lines, or conductors, the laying machine comprising:

second laying means for simultaneously laying a plurality of cables, lines, or conductors;
and

a plurality of laying apparatuses as in claim 2, correlated in number to that of said plurality of cables, lines, or conductors simultaneously laid, wherein

said second laying means regulates, in an independent-manner, an individual specific threshold of intervention for reducing the hydraulic delivery of the feed pump of each of the respective laying apparatuses in the event that the respective pressure measured exceeds said respective pre-determined pressure value.

17. (Previously Presented) Laying machine for cables, lines, or conductors, the laying machine comprising:

laying means able to simultaneously lay a plurality of cables, lines, or conductors comprising a plurality of laying apparatuses as in claim 4, correlated in number to that of said plurality of cables, lines, or conductors simultaneously laid, to be able to regulate in an independent manner, each respective threshold of intervention for reducing the hydraulic delivery of the feed pump in response to the pre-determined pressure value of each of the respective laying apparatuses.

18. (Previously Presented) The method of claim 11 applied to a system of apparatuses that each comprise a hydraulic circuit provided with a variable delivery feed pump and a motor connected to said feed pump to drive laying means for said cables, lines, or conductors, the method further comprising:

simultaneously laying a plurality of cables, lines, or conductors, and
regulating, in an independent manner each respective threshold of intervention for reducing the hydraulic delivery of the feed pump of each of the respective laying apparatuses in the event that the respective pressure measured exceeds said respective pre-determined pressure value.

19. (Withdrawn) Apparatus as in claim 3, wherein said sensor is able to detect said electric signal, indicating an amount of tension, current or frequency, that is correlated to the pressure of the oil in the hydraulic circuit.

20. (Currently Amended) The method of claim 11, wherein said activating step comprises utilizing said feed pump as a motor and utilizing said motor as a feed pump.